

Claims

1. An infrared imaging device comprising
a plurality of thermal resistors arranged
one-dimensionally or two-dimensionally, wherein
5 each of the thermal resistors is composed of a
strongly-correlated electron material.
2. The infrared imaging device of Claim 1, wherein
the thermal resistor is a metal oxide having a perovskite
10 structure and including at least one of a rare earth metal and
an alkaline earth metal.
3. The infrared imaging device of Claim 1 further comprising
a detecting unit operable to detect an amount of received
15 infrared light using the thermal resistor wherein,
the plurality of thermal resistors and the detecting unit
are formed on a common semiconductor substrate.
4. An infrared camera comprising a plurality of thermal
20 resistors arranged one-dimensionally or two-dimensionally,
and generating image data by detecting an amount of received
infrared light using the thermal resistors, wherein
the thermal resistor is composed of a strongly-correlated
electron material.
- 25 5. An infrared detector that detects an amount of received
infrared light using a thermal resistor, wherein
the thermal resistor is composed of $\text{Pr}_{1-x}\text{Ca}_x\text{MnO}_3$ having

a perovskite structure in which at least one of replacement of a part of Pr with a different a rare earth metal and replacement of a part of Ca with a different alkaline earth metal is performed.

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6. An infrared detector that detects an amount of received infrared light using a thermal resistor, wherein

the thermal resistor is composed of LaTiO_3 having a perovskite structure in which a part of La is replaced with an alkaline earth metal.

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7. An infrared detector that detects an amount of received infrared light using a thermal resistor, wherein

the thermal resistor is composed of RNiO_3 having a perovskite structure and including R in which a part of R is replaced with an alkaline earth metal, where R is an yttrium or a rare earth metal.

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8. The infrared detector of Claim 7, wherein

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R in the RNiO_3 is made by compounding two or more elements from among the yttrium and the rare earth metal.

9. The infrared detector Claim 7, wherein

the thermal resistor is composed of RNiO_3 in which a part of R is replaced with an alkaline earth metal.

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10. An infrared detector comprising:

a thermal resistor composed of a metal oxide having a

perovskite structure;

a magnetic field applying unit operable to apply a magnetic field to the thermal resistor; and

5 a detecting unit operable to, in a state where the magnetic field is being applied to the thermal resistor by the magnetic field applying unit, detect an amount of received infrared light using the thermal resistor.

11. The infrared detector of Claim 10 further comprising

10 a changing unit operable to cause the magnetic field applying unit to change an intensity of the magnetic field.

12. An infrared detector that detects an amount of received infrared light using a thermal resistor, wherein

15 the thermal resistor is composed of a metal oxide having a perovskite structure, and is formed on an insulator having a perovskite structure whose lattice constant differs from a lattice constant of the thermal resistor.

20 13. An infrared detector comprising:

a thermal resistor composed of a metal oxide having a perovskite structure;

a stress applying unit operable to apply a stress to the thermal resistor; and

25 a detecting unit operable to, in a state where the stress is being applied to the thermal resistor by the stress applying unit, detect an amount of received infrared light using the thermal resistor.

14. The infrared detector of Claim 13 further comprising
a changing unit operable to cause the stress applying unit
to change an intensity of the stress.

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15. An infrared detector comprising:
a thermal resistor composed of a metal oxide having a
perovskite structure;

an electric field applying unit operable to apply an
10 electric field to the thermal resistor; and

a detecting unit operable to, in a state where the electric
field is being applied to the thermal resistor by the electric
field applying unit, detect an amount of received infrared light
using the thermal resistor.

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16. The infrared detector of Claim 15 further comprising
a changing unit operable to cause the electric field
applying unit to change an intensity of the electric field.

20 17. An infrared detector that detects an amount of received
infrared light using a thermal resistor, wherein

the thermal resistor is composed of $\text{Pr}_{1-x}\text{Ca}_x\text{MnO}_3$ having
a perovskite structure, to which a metal oxide having a
perovskite structure is added, the metal oxide including at
25 least one of a rare earth metal excepting Pr and an alkaline
earth metal excepting Ca.

18. The infrared detector of Claim 17, wherein

the metal oxide is any of a manganese oxide, a titanium oxide, an aluminum oxide, a gallium oxide, and a cobalt oxide.